#589 - Experimental Study

Impact Of Tumour-Infiltrating Immune Cells On Oncological Outcome (Local Recurrence, Distant Metastasis, Overall Survival) In Soft Tissue Sarcoma Patients.

Orthopaedics / Musculoskeletal Tumors / Malignant Tumors

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Background
Soft tissue sarcomas (STS) have a generally low immunogenic potential. Nevertheless, differences between histological subtypes and other clinico-pathological features may also result in differing immune-profiles.

Objectives
The objective of this retrospective study was to analyse the impact of tumour-infiltrating immune cells on oncological outcome – i.e. local recurrence (LR), distant metastasis (DM), and overall survival (OS) – in extremity STS (eSTS) patients.

Study Design & Methods
Overall, 188 patients (median age: 62.5 [IQR: 49.5-75] years; 46.3% females; median follow-up 46.5 [IQR: 19-99] months) eSTS were retrospectively included. Patients had undergone surgery with curative intent for primarily localised disease at a single tertiary sarcoma centre. Tissue microarrays (1266 cores in total) were stained with multiplex immunohistochemistry. Multispectral imaging was used to analyse seven different cell types (CD20+ B-cells; CD68+ macrophages; CD3+, CD3+CD4+ helper, CD3+CD8+ cytotoxic, CD3+CD4+CD45RO+ helper memory, CD3+CD8+CD45RO+ cytotoxic memory T-cells). Clinico-pathological parameters were correlated with immune cell phenotype abundance. In order to investigate the influence of prognostic parameters, Fine&Gray models for LR and DM (with death as competing event), as well as Cox-regression models for OS were calculated. Immunohistochemical findings were validated with gene expression data of TCGA-SARC specific for B- and T-cells, as well as macrophages.

Results
Patients aged older than 62.5 years had higher macrophage (p=0.002) but lower B-cell (p=0.013) abundance than younger patients. Depending on histological subtypes, significant differences in immune cell abundance were found, with generally higher levels in myxofibrosarcoma and undifferentiated pleomorphic sarcoma. In univariate analysis, high B-cell (p=0.035) and macrophage abundance (p=0.003) was associated with increased LR-risk. significance of high macrophage

abundance (p=0.014) prevailed in the multivariate analysis, irrespective of margin status, gender, age or B-cell abundance. Other immune cells were not significantly associated with oncological outcome.

Conclusions

Depending on clinico-pathological factors as histological subtype, significant differences in Immune cell abundance are found. High macrophage abundance seems to be a negative prognostic factor for LR, independent from important clinical variables (e.g. margin status).